

## ABSTRACT OF THE INVENTION

[0039] A methods for inhibiting silica scale formation and corrosion in aqueous systems where soluble silica ( $\text{SiO}_2$ ) can be maintained at residuals below 200 mg/L, but more preferably maintained at greater than 200 mg/L as  $\text{SiO}_2$ , without silica scale and with control of deposition of source water silica accumulations as high as 4000mg/L (cycled accumulation) from evaporation and concentration of source water. The methods of the present invention also provide highly effective inhibition of corrosion for carbon steel, copper, copper alloy, and stainless steel alloys. The methods of the present invention comprise pretreatment removal of hardness ions from the makeup source water, maintenance of electrical conductivity, and elevating the pH level of the aqueous environment. Thereafter, specified water chemistry residual ranges are maintained in the aqueous system to achieve inhibition of scale and corrosion.